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VICTORY GARDENS

MISCELLANEOUS PUBLICATION NO. 483

U. S. DEPARTMENT OF AGRICULTURE

FROM
GEORGE MAHON
MEMBER OF CONGRESS
19TH DISTRICT OF TEXAS

VEGETABLES that are common and easily grown can furnish a good share of the vitamins and minerals that all of us need every day. Those who wish to grow a small vegetable garden are more likely to succeed if they confine their efforts to a few crops, such as those mentioned in the following pages.

This publication gives general information for the inexperienced gardener on what to grow, how to prepare and fertilize the soil, how and when to plant, how to care for the plants, and how to utilize the crop. For more detailed directions consult your State agricultural college, county agent, vocational agricultural teachers, or local experienced gardeners.

Unusual demands are being made on domestic supplies of vegetable seeds. Do not waste them.

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VICTORY GARDENS

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WE NEED MINERALS AND VITAMINS

AMERICANS, as a group, have not been eating enough of those foods that are rich in the minerals and vitamins necessary for good growth and health. Surveys by nutrition experts and the large number of rejections under the Selective Service Act both emphasize the need for improving our eating habits. Some people have not been eating sufficient quantities of vegetables rich in vitamins and minerals because they could not get them, but millions more have not eaten enough of these essential vegetables because of lack of knowledge, indifference, or unfortunate food habits, even though they could easily afford and obtain them. National health as well as personal well-being demands that we learn more about what vegetables we need and then make special efforts to use those vegetables effectively. Nutrition experts advise that people get their vitamins from food rather than from indiscriminate use of synthetic preparations.

VEGETABLES AS SOURCES OF MINERALS AND VITAMINS

Vegetables are important foods because of the minerals and vitamins they contain. Their greatest contribution is probably in vitamin A and vitamin C (ascorbic acid), but as a group they also furnish some vitamin B_1 (thiamin), vitamin G (riboflavin), calcium, and iron.

Even small amounts of these substances are important, because they supplement what is obtained from other kinds of food.

Vegetables differ greatly in their vitamin and mineral contents. Fortunately, however, some of the commonest and easiest to grow are the most valuable. Table 1 shows which of a number of commonly used vegetables are especially good sources of vitamin A, thiamin, ascorbic acid, riboflavin, calcium, and iron. Others, such as onions and beets, have great practical value in meals because of flavor and color, even though they are not important for good nutrition.

TABLE 1.—*Vegetables as sources of vitamins and minerals* [1]

Kind of vegetable	Vitamin A	Thiamin	Ascorbic acid	Riboflavin	Calcium	Iron
Beans, lima		XX		X		XX
Beans, snap	XX	X	X		X	X
Beet greens	XX			XX		XX
Cabbage		X	XX	X	X	
Carrots	XX	X		X	X	
Chard	XX				XX	XX
Collards	XX	X	XX	X	XX	X
Kale	XX	X	XX	XX	XX	XX
Lettuce, green	XX	X		X	X	X
Parsnips		X	X		X	
Spinach	XX	X	XX	X		XX
Squash, Hubbard	XX					
Tomatoes, red	XX	X	XX			
Turnip greens	XX	X	XX	XX	XX	XX
Turnips, white			XX		X	

[1] Excellent sources of each nutrient are indicated by XX; good sources by X.
Data prepared by the Bureau of Home Economics.

WHO SHOULD GROW VEGETABLES?

Every family living on a farm or country place should, of course, have a vegetable garden. Despite the adverse climate for much of the year in some regions or difficult soil problems, it is practicable at some season to raise most of the vegetables listed in table 1, with fair success. Even if special handling or treatment, such as irrigation, drainage, or protecting by windbreaks or fences, is necessary, a garden should be grown.

Most people in small towns and villages either have suitable garden spots of their own or can obtain the use of conveniently located small plots of reasonably good soil that are not too steep, too wet, or too shady. In most cases it is not very satisfactory to attempt gardening at any great distance from home. Inconvenience results in neglect. However, small-town and village dwellers who can find good areas near at hand can learn to grow vegetables profitably. Fresh vegetables out of one's own garden give a particular satisfaction and pleasure.

Large-town and city dwellers generally are in no position to undertake gardening successfully. Those living in outlying or suburban areas and having large sunny lots, away from interfering buildings, structures, trees, and industrial smoke or gaseous wastes, have a better chance of growing successful gardens than large-town or city dwellers. It is wasteful, however, to attempt gardening in cramped, poorly drained, poorly lighted spots in the heart of a city or in most highly developed industrial neighborhoods or within the branch or root spread of large trees. If a person insists upon making a garden under such adverse conditions, for exercise or for pleasure, he should realize the odds against profitable yields. In such locations some of the more common annual flowers might give greater satisfaction for the efforts expended.

CONSERVE SUPPLIES—FOLLOW THROUGH

No profit will accrue to the Nation or to the individual if prospective gardeners undertake the impossible or even the impracticable. It is wasteful and unwise to devote energy, seeds, fertilizer, and tools to gardening under conditions where success is very doubtful. As long as the United States has the task of helping to feed much of the world, seeds and fertilizer should be carefully conserved. There will probably be enough if they are used with care, but there will be none to waste.

Perhaps the worst waste among gardeners has resulted from neglect and abandonment of gardens planted in a flush of enthusiasm but without adequate means or will to carry each crop through to harvest. The Nation cannot afford such waste of labor and materials when it is at war. Every crop planted should be properly sown at the right time, tended to harvest, then harvested at the proper stage of development, and utilized without waste. Unless the product is actually consumed by those who need it, there is no point in spending seeds, fertilizer, and energy in growing it.

A CONTINUOUS SUPPLY SHOULD BE THE GOAL

When growing vegetables for vitamins and health, a continuous supply of a few health-giving kinds should be the goal. One should guard against planting so much of one vegetable at one time that it will result in a surplus and probable waste only to be followed by long periods during which nothing is available. Although some vegetables are suited to planting at intervals over a long period to furnish a continuing supply, others are suited to such a narrow range of changing season that successive plantings are not recommended. Thus, a number of kinds of vegetables or varieties of one kind must be depended upon to provide a continuity of fresh produce. Single plantings, however, of lima beans, some pole beans, chard, and tomatoes

and, in the South, of fall collards, kale, spinach, and turnips remain in a usable stage in the garden for a considerable time.

Some understanding of the behavior of each of these crops under local conditions is necessary in order to plan the best planting schedule and get the most out of the facilities and resources available. It should be understood that effective gardening requires thought and work before and all through the entire season and, in the South, the year round.

WHAT TO GROW

Primarily, one should grow those vegetables that will be most enjoyed, provided they can be grown successfully in the area. However, if a garden is to contribute to a better fed Nation, it should contain most of the vegetables listed in table 1.

The green leafy vegetables—chard, collards, kale, and turnip greens—are of greatest importance, and one or another of them should be available from early spring onward to severe freezing weather. They should be in every garden and should be eaten frequently.

Tomatoes and beans are so widely adapted that they should be generally and generously grown. Tomatoes are so easily canned that they should be grown for canning as well as for eating fresh.

Beets, carrots, and onions can be stored for some time as well as used fresh; so quantities of these sufficient to afford a supply long after harvest may be planted. Parsnips can be left in the ground all winter.

Cabbage is easy to grow, but only a few plants per person should be grown for harvesting at one season, as cabbage does not stand long after heading. However, any large surplus of cabbage can be made into sauerkraut, and heads of the Danish type can be stored.

HOW TO ARRANGE THE PLANTING

If the garden plot slopes appreciably and is subject to washing of the soil, the rows should not run up and down the hill; if the plot is nearly level, the rows should run the long way of the area for convenience in working.

Tall-growing crops should be placed preferably on the north or west side of the garden so that they will not shade the low ones.

Insofar as practicable, the first plantings of small and early vegetables should be along the south or east side, later crops being sown progressively across the area. This orderly procedure helps avoid confusion and damage to the earlier sowings.

In general, flat culture is preferable to and requires less work than growing the crops on raised beds or ridges. Ridges, however, must be used on poorly drained areas where heavy normal rainfall results in frequent surface flooding and on areas where the furrow method of irrigation is to be used.

PLANS FOR GARDENS

It is unwise to recommend any one plan for all regions or for all gardeners. Plans 1 to 3, however, present some simple basic schemes for gardens of different sizes. With a little experience and study of local requirements and possibilities, one can develop improvements that will better adapt the garden to individual needs and localities.

HOW TO PREPARE AND FERTILIZE THE SOIL

Where the soil is deep, it should be spaded or plowed to a depth of 8 to 10 inches. On thin soils be careful, however, to dig up very little subsoil. Heavy soils should not be worked while wet. Well-rotted leafmold, horse manure or cow manure, or other decayed organic matter, if obtainable, should be worked into the soil in amounts up to about a bushel per 25 square feet (about 20 tons per acre). The spaded-up masses should be crushed and roughly leveled out as the spading progresses.

Unless commercial fertilizer is known to be unnecessary for the plot, it should be applied along the row in a band about 3 to 4 inches wide and about 2 inches from the line where the seeds will be sown or the plants set. This can be done by scooping out a wide furrow about 2 inches deep with a good-sized common hoe and then distributing the fertilizer uniformly along the furrow.

Common mixtures like 5–10–5,[1] or those of similar analysis, should be applied at the rate of 1 pound per 30 feet of row (750 pounds per acre) when the rows are 2 feet apart. (An ordinary 10-quart pail holds 15 to 20 pounds of fertilizer.) If the rows are only a foot apart, one-half pound per 30 feet is enough. No more than 1 pound per 30 feet should be applied in bands near the row, regardless of the distance between rows, as otherwise the seedlings may be damaged. The fertilizer should be mixed thoroughly with the soil and covered about 2 inches deep. The furrow can be partly filled by opening up the next row to plant the seed. The fertilizer must not come in contact with the seed. The row for the seed should be opened just before planting. Broadcasting the fertilizer is far easier than applying it in bands on one side and slightly below the seed, but it results in less efficient use of the fertilizer.

HOW TO PLANT

Nearly all gardeners waste seed by sowing it too thickly. This also wastes labor as the seedlings later must be thinned by hand to a spacing that will allow proper development. Poor growth and poor-quality vegetables are obtained if the seed is sown too thick and the

[1] 5 percent nitrogen, 10 percent phosphoric acid, and 5 percent potash.

Plan 1.—SCHEME FOR A VERY SMALL GARDEN, 30 by 50 feet, approximately 1/30 acre

[Figures at left margin indicate distance in feet between rows. Rows run the long way of the plot]

North or west side of garden

2 feet.	**Pole beans.** Kentucky Wonder; ¼ pound seed.	After harvesting beans, follow with 3 rows of Purple Top Globe **turnips**; 1 ounce seed.
2 feet.	**Pole beans.**	
2 feet.	**Pole lima beans.** Carolina or Sieva; ¼ pound seed.	
2 feet.	**Pole lima beans.**	
2½ feet.	**Tomatoes** (staked). Earliana; 2 dozen plants.	
3½ feet.	**Tomatoes** (staked). Marglobe; 2 dozen plants.	
2½ feet.	**Chard.** Fordhook Giant; ½ ounce seed.	
1½ feet.	**Beets.** Crosby Egyptian or Early Wonder; ½ ounce seed.	After harvesting beets, mustard, and turnips, follow August 1 with 2 rows of **collards**; 1 packet seed.
1½ feet.	**Mustard.** Tendergreen or Giant Curled; 1 packet seed.	
1½ feet.	**Turnips.** Shogoin; 1 packet seed.	
2½ feet.	**Cabbage.** Golden Acre; 30 plants.	After harvesting cabbage and onions, follow with 3 rows of Detroit Dark Red **beets**; 1½ ounces seed.
2 feet.	**Onions** (yellow). 1 pint sets.	
1½ feet.	**Radishes.** Scarlet Globe; 2 half-row plantings 10 days apart; ½ ounce seed.	Follow with 2 rows of U. S. No. 5 Refugee **beans**; ½ pound seed.
1 foot.	**Spinach.** Long Standing Bloomsdale; ¼ ounce seed.	
1 foot.		

Plan 2.—SCHEME FOR A SMALL GARDEN, 35 by 100 feet, approximately 1/12 acre

[Figures at left margin indicate distance in feet between rows. Rows run the long way of the plot]

North or west side of garden

2 feet.	**Pole beans.**	Kentucky Wonder; ½ pound seed. After harvesting beans, follow with 3 rows of Purple Top Globe **turnips**; 1 ounce seed.
2 feet.	**Pole beans.**	
2 feet.	**Pole lima beans.**	Carolina or Sieva; ½ pound seed.
2 feet.	**Pole lima beans.**	
3 feet.	**Tomatoes** (not staked).	Earliana; 2½ dozen plants; 3½ feet apart.
4 feet.	**Tomatoes** (not staked).	Marglobe; 4 dozen plants; 4 feet apart.
4 feet.	**Tomatoes** (not staked).	
3 feet.	**Chard.**	Fordhook Giant; 1 ounce seed.
1½ feet.	**Beets.**	Crosby Egyptian or Detroit Dark Red; 1 ounce seed. After harvesting beets, mustard, and turnips, follow these 3 rows August 1 with 2 rows of **collards**; 200 plants or 2 packets seed.
1½ feet.	**Mustard.**	Tendergreen or Giant Curled; ¼ ounce seed.
1½ feet.	**Turnips.**	Shogoin; ¼ ounce seed.
2½ feet.	**Cabbage.**	½ row Golden acre; ½ row Glory of Enkhuizen; 3 dozen plants of each variety.
1½ feet.	**Onions.**	Yellow or Ebenezer; 1 quart sets.
1 foot.	**Radishes.**	Scarlet Globe; ⅓ row at 10-day intervals; 1 ounce seed. After harvesting radishes and spinach, follow these 3 rows with 2 rows of U. S. No. 5 Refugee **beans**; 1½ feet apart; 1 pound seed.
1 foot.	**Spinach.**	Long Standing Bloomsdale; ½ ounce seed.
1 foot.	**Spinach.**	Nobel or Prickly; ½ ounce seed.
1 foot.		

Plan 3.—SCHEME FOR A MEDIUM-SIZE GARDEN spaced for working with horse or small garden tractor, 100 by 150 feet, approximately ⅓ acre

[All rows are 3 feet apart except tomatoes and squash, which are spaced 4½ feet from other crops and 4½ feet apart. Rows run the long way of the plot]

North or west side of garden

Pole beans. 2 rows Kentucky Wonder; ¾ pound seed.
Pole beans. 2 rows Carolina or Sieva; ¾ pound seed.
} Follow with 4 rows **turnips;** 1½ ounces seed.

Tomatoes. ½ row Earliana; 2 dozen plants. ½ row Marglobe; 20 plants.

Tomatoes. 2 rows Marglobe; 100 plants.

Squash. ½ row Yellow Bush Scallop; ½ to ¾ ounce seed. **Peppers.** ½ row Ruby King; 3 dozen plants.

Parsnips. 1 row Hollow Crown; ½ to ¾ ounce seed.

Sweet corn. 4 half rows early; ¾ pound seed. 4 half rows late; ¾ pound seed. { These rows interplanted with Hubbard **squash;** ½ row; 1 ounce seed.

Chard. ½ row Fordhook Giant; ¾ to 1 ounce seed. New Zealand **spinach;** ½ ounce seed.

Beets. 1 row Crosby Egyptian (plant half 10 days later); 1 to 1½ ounces seed.
Mustard. ½ row Tendergreen or Giant Curled. **Turnips.** ½ row Shogoin; 1 packet seed each.
Turnips. 1 row Shogoin; ½ ounce seed.
} Follow with 2 rows of **collards;** ½ ounce seed or 300 plants.

Cabbage. ½ row Golden acre; 4 dozen plants. ½ row Glory of Enkhuizen; 3 dozen plants.
Onions. 1 row yellow or Ebenezer; 1½ quarts sets or 500 plants.
} Follow with Detroit Dark Red **beets;** 3 ounces seed.

Potatoes. 4 rows ½ bushel seed. Follow with U. S. No. 5 Refugee **beans;** 2 pounds seed.

Spinach. 2 rows Long Standing Bloomsdale; 1½ ounces seed.

Peas. 3 rows 1½ pounds seed each of early, medium, and late varieties. Follow with 5 rows of late **potatoes;** ½ bushel seed.

Radishes. ½ row Scarlet Globe; ¾ ounce seed. **Lettuce;** ½ row Curled Simpson; 1 packet seed. { Follow with All Seasons **cabbage;** 75 plants.

plants are not thinned out to proper spacing in the row. **Don't buy more seed than you need to plant. Don't plant more seed than you need to get a stand.**

Bean and pea seeds should be spaced as the plants are to stand. These vegetables should never be thinned in the rows.

Small seeds like those of carrots, collards, onions, parsnips, spinach, and turnips should be sown three or four times as thickly as the plants are to stand finally since usually many seeds fail to produce good seedlings. Surplus seedlings are thinned out before the plants crowd one another.

Beet and chard "seeds" should be sown no thicker than the plants are to stand, because the "seeds" are really fruits, each containing several seeds. Some thinning is always necessary.

Cabbage, tomato, and onion plants and onion sets should be placed where they are to remain.

Table 2 shows suitable spacing for several crops, the amount of seed required for 1 foot of row and for 100 feet of row, and the proper depth of covering in a good sandy loam. In heavy soils seed should be covered less deeply and in light sandy soils a little more deeply than is indicated.

TABLE 2.—*Seed and space required for certain vegetables when grown in small or intensive gardens*

Kind of vegetable	Minimum space between rows	Distance between plants in row	Seed required to plant—			Depth to cover seed
			1 foot of row	100 feet of row	1 acre [1]	
	Inches	*Inches*	*Number*		*Pounds*	*Inches*
Beans, lima (pole)	24	24	3–4	¼ pound	40–60	1
Beans, snap (pole)	24	24	3–4	¼ pound	60	1
Beets	14	2–3	6	1 ounce	10–12	1
Cabbage	27	15–24		[2] 50–90	[2] 15,000	
Carrots	14	2–3	20–25	¼ ounce	4	½
Chard	18	4–6	3–4	1 ounce	8–10	1
Collards	18	15–18	[3] 3–4	1 packet	[3] ¼	½
Kale	18	12	[3] 3–4	1 packet	4	½
Lettuce	15	12	8–10	1 packet	2	½
Mustard	15	4–6	8–10	¼ ounce	2	½
Onions	14	2–3	15–20	1 quart [4]		½
Parsnips	18	2–3	15–20	½ ounce	3	½
Peas	18	1	12–15	1 pound	150	1–1½
Potatoes	24	12		6–8 pounds	900	4
Radishes	12	2		1 ounce	12	½
Spinach	12	3–4	10–15	½ ounce	12	½
Squash, Hubbard	100	30	[3] 4–5	1 ounce	2	1–1½
Sweet corn	36	15	[3] 3–4	¼ pound	15	1
Tomatoes (staked)	36	24		[2] 50	[2] 7,500	
Turnips	14	2–3	20–25	¼ ounce	2	½

[1] Average instead of very intensive rate of planting for use in calculating seed requirements for larger gardens.

[2] Plants.

[3] Several seeds planted in one spot where the plants are to stand.

[4] Sets.

TIME TO PLANT DIFFERENT VEGETABLES

Because of the great diversity of climates and seasons over the country, no detailed information on planting dates can be given in this publication. Vegetables, however, may be roughly classified and sown according to their hardiness and temperature requirements. Gardeners should consult their experienced neighbors and local agricultural advisers or obtain the more detailed publications available on gardening (p. 11). A rough timetable of planting is shown as table 3.

TABLE 3.—*Approximate time to plant certain vegetables*

Early-spring plantings		Late-spring or summer plantings		Late-summer or fall plantings (6 to 8 weeks before fall freeze)
4 to 6 weeks before frost-free date	2 to 4 weeks before frost-free date	Frost-free date	2 to 6 weeks after frost-free date	
Cabbage plants.	Beets.	Beans.	Beans, snap.	Beets.
Lettuce.	Carrots.	Beets.	Beets.	Collards.
Onions.	Chard.	Sweet corn.	Sweet corn.	Kale.
Peas.	Lettuce.	Squash.		Mustard.
Potatoes.	Mustard.	Tomato plants.		Spinach.
Spinach.	Peas.			Turnips.
Turnips.	Parsnips.			
	Radishes.			

CULTIVATING AND MULCHING

All weeds must be kept under control by thorough shallow cultivation or hoeing. Vegetable crops should not be cultivated deeply because of danger to the roots that grow near the surface. Weeds that take root again readily after hoeing or pulling should be carried out of the garden. The garden should be cultivated as soon as the soil is dry enough after each rain or irrigation and as often in addition as is necessary to keep the weeds down. There is no proved benefit from stirring an already cultivated soil that is free of weeds.

Care should be taken to avoid trampling and packing the soil so far as practicable. Mulching between the rows with straw, dried lawn clippings, leaves, or similar material will help conserve moisture and keep down weeds.

WATERING OR IRRIGATION

Frequent light sprinkling or irrigation is a bad practice. If water is to be applied, the garden should be thoroughly and deeply soaked, as by a fairly heavy rain, and watered again only when the soil shows signs of becoming dry.

PROPER HARVESTING AND USE OF PRODUCTS

Too many growers, in attempts to get larger growth and yield, delay harvest beyond the stage of best quality. No vegetable should be allowed to become tough, coarse, overgrown, and unpalatable before being harvested. Quantity is important, but so is quality. Large size in a product is, of itself, of little value. Indeed, excessive size is generally associated with mediocre, if not low, quality.

The sooner vegetables can be used after harvest, the better. If they must be kept a while, they should generally be kept in a cool, moist place.

Most people cook vegetables too long; this destroys much of the vitamin content. They also cook them in too much water, which removes and wastes part of the valuable minerals. Soda should never be added to green vegetables to set the color, as it destroys vitamin C.

ADDITIONAL INFORMATION

In the brief space of a publication of this character, only the bare outlines of simple vegetable gardens can be presented. This publication is intended to give only general information that will introduce the inexperienced prospective gardener to the subject and enable him to make a beginning. Those who wish to go farther with the subject should study the publications on gardening and storage prepared by their own State agricultural experiment stations and extension services. The United States Department of Agriculture also publishes several more comprehensive bulletins on the subject. The following can be obtained free from the Office of Information, United States Department of Agriculture, Washington, D. C.:

Leaflet 203, Disease-Resistant Varieties of Vegetables for the Home Garden.
Farmers' Bulletin 1044, The City Home Garden.
Farmers' Bulletin 1371, Diseases and Insects of Garden Vegetables.
Farmers' Bulletin 1673, The Farm Garden.
Farmers' Bulletin 1743, Hotbeds and Coldframes.

The following can be purchased for 5 cents from the Superintendent of Documents, Government Printing Office, Washington, D. C.:

Department Bulletin 1427, Dry-Land Gardening at the Northern Great Plains Field Station, Mandan, N. Dak.

PLAN OF YOUR VICTORY GARDEN

North or west side of garden

NOTES ON YOUR VICTORY GARDEN

GARDEN

FOR VICTORY

U. S. GOVERNMENT PRINTING OFFICE: 1942

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